

IN THE CLAIMS – Following is the list of claims and their status:

1.-75. (Cancelled)

76. (NEW) A UV detection system, comprising:

an optical system capable of focusing incident radiation;

a UV crystal filter having a pass band in a desired spectral region, the UV crystal positioned to receive focused incident radiation from the optical system; and

a radiation detection system sensitive to radiation in at least the pass band of the UV crystal filter, the radiation detection system positioned to receive radiation transmitted through the UV crystal filter,

wherein the optical system includes filters that filter out radiation having wavelengths outside of those in the desired spectral region;

wherein the UV crystal filter comprises a host material that is transparent within at least the desired spectral region, and at least one dopant incorporated within the host material;

wherein the at least one dopant provides optical absorption bands such that the crystalline filter has the pass band within the desired spectral region;

wherein the host material is chosen from the group consisting of MgF_2 , CaF_2 , SrF_2 , BaF_2 , ZnF_2 , and CdF_2 ; and

wherein the at least one dopant includes a fluoride compound dopant.

77. (NEW) The system of claim 76, wherein the desired spectral region includes radiation having a wavelength of between about 200 nm and about 350 nm.

78. (NEW) The system of claim 76, wherein the host material is CaF_2 and the at least one dopant includes CeF_3 and CeN .

79. (NEW) The system of claim 76, wherein the host material is CaF_2 and the at least one dopant includes CeF_3 , CeN , EuF_3 and EuN .

80. (NEW) The system of claim 76, wherein the host material is CaF_2 and the at least one dopant includes CeF_3 and CeC_2 .

81. (NEW) The system of claim 76, wherein the fluoride compound includes a lanthanide fluoride or an actinide fluoride, wherein the lanthanide or actinide is chosen from the group of elements consisting of Ce, Pr, Nd, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu, and U.

82. (NEW) The system of claim 76, wherein the at least one dopant further includes a second dopant compound forming one of a nitride compound, an oxide compound, a boride compound, a carbide compound or a hydroxide compound.

83. (NEW) A UV detection system, comprising:
an optical system capable of focusing incident radiation;
a UV crystal filter having a pass band in a desired spectral region, the UV crystal positioned to receive focused incident radiation from the optical system; and

a radiation detection system sensitive to radiation in at least the pass band of the UV crystal filter, the radiation detection system positioned to receive radiation transmitted through the UV crystal filter,

wherein the optical system includes filters that filter out radiation having wavelengths outside of those in the desired spectral region;

wherein the UV crystal filter comprises a host material that is transparent within at least the desired spectral region, and at least one dopant incorporated within the host material;

wherein the at least one dopant provides optical absorption bands such that the crystalline filter has the pass band within the desired spectral region; and

wherein the host material is CaF_2 and the at least one dopant includes CeF_3 and CeN .

84. (NEW) The system of claim 83, wherein the desired spectral region includes radiation having a wavelength of between about 200 nm and about 350 nm.

85. (NEW) A UV detection system, comprising:

an optical system capable of focusing incident radiation;

a UV crystal filter having a pass band in a desired spectral region, the UV crystal positioned to receive focused incident radiation from the optical system; and

a radiation detection system sensitive to radiation in at least the pass band of the UV crystal filter, the radiation detection system positioned to receive radiation transmitted through the UV crystal filter,

wherein the optical system includes filters that filter out radiation having wavelengths outside of those in the desired spectral region;

wherein the UV crystal filter comprises a host material that is transparent within at least the desired spectral region, and at least one dopant incorporated within the host material;

wherein the at least one dopant provides optical absorption bands such that the crystalline filter has the pass band within the desired spectral region; and

wherein the host material is CaF_2 and the at least one dopant includes CeF_3 , CeN , EuF_3 and EuN .

86. (NEW) The system of claim 85, wherein the desired spectral region includes radiation having a wavelength of between about 200 nm and about 350 nm.

87. (NEW) A UV detection system, comprising:

an optical system capable of focusing incident radiation;

a UV crystal filter having a pass band in a desired spectral region, the UV crystal positioned to receive focused incident radiation from the optical system; and

a radiation detection system sensitive to radiation in at least the pass band of the UV crystal filter, the radiation detection system positioned to receive radiation transmitted through the UV crystal filter,

wherein the optical system includes filters that filter out radiation having wavelengths outside of those in the desired spectral region;

wherein the UV crystal filter comprises a host material that is transparent within at least the desired spectral region, and at least one dopant incorporated within the host material;

wherein the at least one dopant provides optical absorption bands such that the crystalline filter has the pass band within the desired spectral region; and

wherein the host material is CaF_2 and the at least one dopant includes CeF_3 and CeC_2 .

88. (NEW) The system of claim 87, wherein the desired spectral region includes radiation having a wavelength of between about 200 nm and about 350 nm.

89. (NEW) A UV detection system, comprising:

an optical system capable of focusing incident radiation;

a UV crystal filter having a pass band in a desired spectral region, the UV crystal positioned to receive focused incident radiation from the optical system; and

a radiation detection system sensitive to radiation in at least the pass band of the UV crystal filter, the radiation detection system positioned to receive radiation transmitted through the UV crystal filter,

wherein the optical system includes filters that filter out radiation having wavelengths outside of those in the desired spectral region;

wherein the UV crystal filter comprises a host material that is transparent within at least the desired spectral region, and at least one dopant incorporated within the host material;

wherein the at least one dopant provides optical absorption bands such that the crystalline filter has the pass band within the desired spectral region; and

wherein the host material is CaF_2 and the at least one dopant includes CeF_3 and CeO_2 .

90. (NEW) The system of claim 89, wherein the desired spectral region

includes radiation having a wavelength of between about 200 nm and about 350 nm.

91. (NEW) A UV detection system, comprising:

an optical system capable of focusing incident radiation;

a UV crystal filter having a pass band in a desired spectral region, the UV crystal positioned to receive focused incident radiation from the optical system; and

a radiation detection system sensitive to radiation in at least the pass band of the UV crystal filter, the radiation detection system positioned to receive radiation transmitted through the UV crystal filter,

wherein the optical system includes filters that filter out radiation having wavelengths outside of those in the desired spectral region;

wherein the UV crystal filter comprises a host material that is transparent within at least the desired spectral region, and at least one dopant incorporated within the host material;

wherein the at least one dopant provides optical absorption bands such that the crystalline filter has the pass band within the desired spectral region; and

wherein the host material is chosen from the group consisting of SrF_2 , BaF_2 , ZnF_2 , and CdF_2 .

92. (NEW) The system of claim 91, wherein the at least one dopant includes a fluoride compound dopant.

93. (NEW) The system of claim 92, wherein the fluoride compound includes a lanthanide fluoride or an actinide fluoride, wherein the lanthanide or actinide is chosen from

the group of elements consisting of Ce, Pr, Nd, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu, and U.

94. (NEW) The system of claim 92, wherein the at least one dopant further includes a second dopant compound forming one of a nitride compound, an oxide compound, a boride compound, a carbide compound or a hydroxide compound.

95. (NEW) The system of claim 91, wherein the desired spectral region includes radiation having a wavelength of between about 200 nm and about 350 nm.

96. (NEW) The system of claim 91, wherein the optical system includes filters that filter out radiation having wavelengths above those in the desired spectral region.

97. (NEW) The system of claim 91, wherein the host material is CaF_2 and the at least one dopant includes CeF_3 and CeN .

98. (NEW) The system of claim 91, wherein the host material is CaF_2 and the at least one dopant includes CeF_3 , CeN , EuF_3 and EuN .

99. (NEW) The system of claim 91, wherein the host material is CaF_2 and the at least one dopant includes CeF_3 and CeC_2 .